UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAY 19 2017

REPLY TO THE ATTENTION OF:

MEMORANDUM

SUBJECT: ACTION MEMORANDUM – Request for Approval and Funding for Emergency and Time-Critical Removal Actions and an Exemption from the 12-Month Statutory Limit at the Keystone Corridor Ground Water Contamination Site, Indianapolis, Marion County, Indiana (Site ID #B5VX)

FROM: Shelly Lam, On-Scene Coordinator
Emergency Response Branch 1

THRU: Jason H. El-Zein, Chief
Emergency Response Branch 1

TO: Margaret M. Guerriero, Acting Director
Superfund Division

I. PURPOSE

This memorandum requests and documents your approval to expend up to $292,320 to conduct emergency and time-critical removal actions and for an exemption from the 12-month statutory limit at the Keystone Corridor Ground Water Contamination Site (Keystone Corridor or the site) in Indianapolis, Marion County, Indiana. On March 29, 2017, Emergency Response Branch Chief Jason El-Zein verbally authorized $25,000 in funding to conduct emergency response actions to mitigate an imminent and substantial threat of release.

The response actions proposed herein are necessary in order to mitigate threats to public health, welfare, and the environment posed by the presence of uncontrolled hazardous substances at the Site. EPA documented tetrachloroethene (PCE) and trichloroethene (TCE) at the Site; these chemicals are hazardous substances as defined by section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The response actions are to perform vapor mitigation and post-installation monitoring to demonstrate that performance standards are achieved. Response actions will be conducted in accordance with Section 104(a)(1) of CERCLA, 42 U.S. Code (USC) § 9604(a)(1), to abate or eliminate the immediate threat posed to public health and/or the environment by the presence of the hazardous substances at the Site. The uncontrolled conditions of the hazardous substances present at the Site and the potential threats they present require that this action be classified as a time-critical removal action. EPA's actions will require approximately 60 working days to complete.

There are no nationally significant or precedent setting issues associated with the Site. EPA added the Site to the Superfund Program's National Priorities List (NPL) in December 2013.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID: INN000510399
RCRA ID: INN000510399
Category: Emergency and Time-Critical Removal Actions

A. Site Description

1. Removal Site Evaluation

The Keystone Corridor Ground Water Contamination Site is a ground water plume that has contaminated the Fall Creek municipal well field for the City of Indianapolis. The plume consists of chlorinated solvents, specifically PCE, TCE, vinyl chloride, and cis-1, 2-dichloroethene (DCE) from multiple sources. Figure 1 provides a site location map and Figure 2 is a site layout map.

EPA proposed the Site to the NPL in May 2013, and it became final on the NPL in December 2013. The Hazard Ranking System (HRS) documentation record identified over forty known users or handlers of solvents as possible sources for the Keystone Corridor ground water plume. Some of these sources include the former Tuchman Cleaners; Vantage Point Cleaners; Thomas Caterers of Distinction, which formerly housed a rug cleaning operation; and Purtee Plating (Administrative Record [AR] # 22).

During the Remedial Investigation/Feasibility Study (RI/FS), EPA collected ground water, soil gas, subslab, and indoor air samples to characterize site conditions, determine the nature and extent of contamination, and assess risk to human health and the environment. A summary of results is below. Analytical results were compared to residential vapor intrusion screening levels (VISL). VISL were determined using a Target Carcinogen Risk (TCR) of $1x10^{-4}$ and Target Hazard Quotient (THQ) for Non-Carcinogens of 3 for PCE and 1 for TCE (May 2016).

Ground Water Assessment

EPA conducted ground water sampling as part of the RI/FS from February to August 2016. A summary of ground water results from June 2016, the most recent comprehensive sampling event, is discussed below and provided in Table 1. A map of monitoring well locations is provided as Figure 3. Laboratory reports are part of the Administrative Record (AR # 35-38, 40-44, 46).

PCE was detected in 11 ground water monitoring wells. Concentrations ranged from 1.8 to 1,900 micrograms per liter (µg/L). The highest concentration was detected in monitoring well KC-MW-106-S. According to the VISL calculator, the target ground water concentration for

PCE is 170 µg/L. Four monitoring wells had PCE concentrations above the target ground water concentration.

TCE was detected in seven monitoring wells at concentrations ranging from 2 to 73 µg/L. The highest concentration was detected in monitoring well KC-MW-106-S. The target groundwater concentration for TCE is 5.2 µg/L. Five monitoring wells had TCE concentrations concentrations above the target ground water concentration.

Soil Gas Assessment

EPA conducted soil gas sampling between September 26 and October 5, 2016. A summary of soil gas results is discussed below and provided in Table 2. A map of soil gas sample locations is provided as Figure 4.

PCE was detected in soil gas at concentrations between 1.21 and 50,900 parts per billion by volume (ppbv). The target soil gas concentration is 4,200 micrograms per cubic meter (µg/m^3) or 619 ppbv. PCE concentrations exceeded 619 ppbv in 22 of the 51 samples collected. The highest concentration was detected at location KC-HS-005.

TCE was present in soil gas at concentrations between 0.113 and 2,020 ppbv. The target soil gas concentration for TCE is 70 µg/m^3 or 13 ppbv. Of the 51 samples collected, 22 samples had TCE above 13 ppbv. The highest concentration was detected at location KC-HS-006.

Subslab and Indoor Air Assessment

EPA collected subslab and indoor air samples at six residential properties. The vapor intrusion pathway was determined to be complete at two residential properties.

A summary of results from each property with a completed pathway is listed below. Table 3 provide subslab and indoor air results for the properties with a completed pathway.

At property RP-039, PCE was detected in the subslab air at a concentration of 7,700 µg/m^3, which exceeded the subslab VISL of 4,200 µg/m^3. TCE was detected in the subslab at 260 µg/m^3, above the VISL of 70 µg/m^3. In the indoor air, PCE was detected at 190 µg/m^3; the indoor air VISL for PCE is 130 µg/m^3. TCE in the crawl space was present at 2.2 µg/m^3 and in indoor air at 6.3 µg/m^3, both of which exceed the VISL of 2.1 µg/m^3. In addition to exceeding the VISL, TCE in indoor air was above the Urgent Response Action Level (URAL) of 6.0 µg/m^3 (AR # 29).

PCE was detected in the subslab of property RP-047 at a concentration of 310 µg/m^3 and TCE was detected at 9.2 µg/m^3; both were below the relevant VISLs. However, TCE was detected above the VISL of 2.1 µg/m^3 at a concentration of 4.5 µg/m^3 in the indoor air.

According to the Office of Solid Waste and Emergency Response (OSWER) Publication 9200.2-154, *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from*

Subsurface Vapor Sources to Indoor Air (AR #33), the vapor intrusion pathway is complete if the following conditions are met:

1. A subsurface source of vapor-forming chemical is present underneath or near buildings;
2. Vapors form and have a route along which to migrate toward the buildings;
3. The buildings are susceptible to soil gas entry;
4. One or more vapor-forming chemicals comprising the subsurface vapor source is also present in the indoor environment; and
5. The buildings are occupied by one or more individuals when the vapor-forming chemicals are present indoors.

As documented above, a completed vapor intrusion pathway is present at the Keystone Corridor Site. PCE and TCE are present in ground water. Both chemicals are vapor-forming and are migrating through soil gas. Two residential buildings have proven to be susceptible to soil gas entry as PCE and/or TCE are present in the indoor air of occupied buildings above relevant screening levels.

6. Physical Location

The Keystone Corridor site is located at the intersection of North Keystone Avenue and East Fall Creek Parkway North Drive in Indianapolis, Marion County, Indiana (Figure 1). The approximate center of the study area is 39.834821degrees north latitude and 86.1217992 degrees west longitude. The areal extent of the site is approximately 101.2 acres (Figure 2).

EPA conducted an Environmental Justice (EJ) analysis for the Site (see Attachment I). Screening of the surrounding area used Region 5's EJ Screen Tool. Region 5 has reviewed environmental and demographic data for the area surrounding the Keystone Corridor Site, and determined there is a high potential for EJ concerns at this location.

7. Site Characteristics

The Site is located in a mixed-use area approximately five miles northeast of downtown Indianapolis. The area includes a mixture of commercial and residential properties.

Citizens Energy Group operates nine active municipal wells in the Fall Creek well field, which supplies drinking water to approximately 122,744 people. Municipal well FC2 contained concentrations of vinyl chloride above the Maximum Contaminant Level (MCL) of 2 µg/l. FC5 contained levels of TCE below the MCL. The use of municipal well FC17 was restricted because the well was located in the path of a ground water plume. Over 40 known users or handlers of solvents have been identified as possible sources for ground water contamination in the HRS documentation record (AR # 22).

8. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

A release or threat of release of hazardous substances, pollutants, or contaminants is present at the Site. EPA confirmed the presence of hazardous substances as defined by section 101(14) of CERCLA including PCE and TCE. Possible exposure routes include inhalation of contaminated air that may have migrated through subsurface soil and groundwater. Potential human receptors include residents living in the homes where there is a completed pathway.

9. NPL status

The Site was proposed to the NPL in May 2013, and became final on the NPL in December 2013. EPA is currently conducting RI/FS activities.

10. Maps, pictures and other graphic representations

Maps are provided as an attachment, and include:

Figure 1 – Site Location Map
Figure 2 – Site Layout Map
Figure 3 – Monitoring Well Locations
Figure 4 – Soil Gas Sample Locations

B. <u>Other Actions to Date</u>

1. Previous actions

This section summarizes previous actions at several of the potential source sites.

Tuchman Cleaners

Tuchman Cleaners operated as a dry cleaner at 4401 N. Keystone Avenue beginning in 1953 until 2008 when the parent company declared bankruptcy. At the request of the Indiana Department of Environmental Management (IDEM), EPA performed site assessment activities in 2011 and 2012. During the site assessment, EPA documented high concentrations of PCE and its degradation products in soil, ground water, and soil gas.

On August 16, 2012, EPA signed an Action Memorandum to conduct a time-critical removal action at the Tuchman Cleaners Site (AR # 8). The scope of the removal action included removing soil that posed a direct contact threat; backfilling excavated areas; conducting vapor intrusion assessment and mitigation; and transportation and disposal off-site of hazardous substances, pollutants and contaminants.

EPA excavated over 2,550 tons of contaminated soil and two underground storage tanks at the Tuchman Cleaners Site. In addition, EPA sampled over 40 downgradient properties to determine if vapor intrusion was occurring. EPA installed vapor mitigations systems at 22 residential properties where completed pathways were identified (AR # 9-20, 24-28, 30-31).

Vantage Point Cleaners

Vantage Point Cleaners operated a dry cleaner at 4449 Allisonville Road from 1979 to 1997. Additionally, Brite Laundry and Dry Cleaning operated at the property from approximately 1968 until 2009, and DMR Cleaners operated at the property from 1997 until 2000. PCE was used as a drycleaning solvent at the property.

IDEM documented releases of PCE to soil and ground water. In February 2012, IDEM issued a Commissioner's Order to the potentially responsible parties (PRP) to (a) determine the nature and extent of contamination and any threat to public health or the environment caused by the release or threatened release of hazardous substances at or from the property; and (b) evaluate and propose response options for IDEM's approval to address the release or threatened release in order to prevent, mitigate and remedy any release or threatened release (AR # 7).

The PRPs did not comply with the order. However, in October 2015, they entered into a Release and Settlement Agreement with IDEM (AR # 34). Per the agreement, Hoosier Insurance paid $32,000 into the IDEM Hazardous Substance Response Fund in exchange for a full and final release of all claims against the parties. No additional information regarding sampling or remediation at Vantage Point Cleaners was available in IDEM's Virtual File Cabinet (VFC) after October 2015.

Thomas Caterers of Distinction

Thomas Caterers of Distinction is located at 4440 N. Keystone Avenue. It was previously operated as a rug cleaning business, W.O. Jones Rug Cleaners, from the 1950's until 1967 (AR # 3). PCE and TCE were detected in both soil and ground water at the Site (AR # 4). On June 18, 2010, IDEM requested that the PRPs conduct Further Site Investigation (AR # 21). No information regarding investigation or cleanup since 2010 could be found on IDEM's VFC.

Purtee Plating

Purtee Plating is a former metal plating shop located at 2302 E. 44th Street. Environmental investigations detected nickel, arsenic, cadmium, lead, cyanide, PCE, TCE, and other volatile organic compounds (VOC) in soil; and PCE, TCE, and other VOCs in groundwater (AR # 6). The May 2013 Corrective Action Plan (CAP) proposed additional ground water monitoring to confirm ground water flow direction and contaminant plume behavior; installation of a sub slab depressurization system (SSDS) to mitigate vapor intrusion at the property; and institutional controls (AR # 23).

Purtee Plating conducted ground water sampling following CAP approval until February 2015 (AR # 32). As of February 4, 2015, cis-1,2-DCE, PCE, TCE, and 1,1,1-trichloroethane were present in ground water. Purtee Plating calculated that the mean concentrations of PCE, TCE, cis-1,2-DCE in the on-site monitoring wells were less than the 95% upper confidence level in monitoring well PMW-2. Purtee Plating concluded that their facility was not a source of the VOC contamination to ground water observed in area, and requested a No Further Action determination from IDEM.

In March 2017, Purtee Plating filed an environmental restrictive covenant (ERC) (AR # 39). The CAP allowed certain contaminants of concern (COC) to remain in the ground water and soil, provided that land use restrictions were implemented and engineering controls maintained to protect human health. COCs included arsenic, nickel, cadmium, cis-1,2-DCE, PCE, TCE, and vinyl chloride. The ERC did not allow the property to be used for residential purposes, extraction of ground water for any purpose, or occupancy unless a vapor mitigation system is installed. It also required operation and maintance of a vapor mitigation system, that was subsequently installed in June 2015, and restoration of soil disturbed through excavation and/or construction. The ERC and recent work has been conducted in coordination with IDEM.

2. Current actions

EPA is conducting RI/FS activities, including ground water, soil gas, subslab, and indoor air sampling.

C. State and Local Authorities' Roles

IDEM and the Marion County Public Health Department are both cooperating and providing assistance to EPA.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at the Keystone Corridor Ground Water Contamination Site present a threat to the public health or welfare, and the environment, and meet the criteria for a time-critical removal action as provided for in the NCP, 40 CFR 300.415(b)(2). These criteria include, but are not limited to, the following:

300.415(b)(2)(i) - Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

EPA documented a completed exposure pathway for PCE and TCE. PCE and/or TCE are present in ground water. Both chemicals are vapor-forming and are migrating through soil gas. Three buildings have proven to be susceptible to soil gas entry as PCE and/or TCE are present in the indoor air of occupied buildings above relevant screening levels.

Possible exposure routes include inhalation of contaminated air that may have migrated through subsurface soil and groundwater. Potential human receptors include residents living in the homes where there is a completed pathway.

PCE and TCE are hazardous substances, as defined by section 101(14) of CERCLA. The Agency for Toxic Substances and Disease Registry (ATSDR) has studied toxicological effects of these chemicals. Information about each is provided below and referenced in the Administrative Record (Attachment II).

PCE: High concentrations of PCE can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used PCE to get a "high." The Department of Health and Human Services (DHHS) has determined that PCE may reasonably be anticipated to be a carcinogen. PCE has been shown to cause liver tumors in mice and kidney tumors in male rats (AR # 1).

TCE: Breathing small amounts of TCE may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating. Breathing large amounts of TCE may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage. Some studies of people exposed over long periods to high levels of TCE in drinking water or in workplace air have found evidence of increased cancer (AR # 2).

300.415(b)(2)(vii) - The availability of other appropriate federal or state response mechanisms to respond to the release;

EPA does not have a signed Superfund State Contract (SSC) for the Site. An SSC with a state is required before EPA can obligate or expend funds for a remedial action at a site within the state and before EPA can conduct the remedial action. EPA and IDEM will sign a SSC after EPA has issued a Record of Decision. As such, EPA's Remedial Program and the State of Indiana are unable to respond to the release.

IV. ENDANGERMENT DETERMINATION

Given the site conditions, the nature of the known and suspected hazardous substances on site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

Section 104(c) under CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), limits a Federal response action to 12 months unless response actions meet emergency and/or consistency exemptions.

The OSWER VI Guide recommends monitoring to demonstrate that performance standards are met by the vapor mitigation system. The guidance recommends monitoring in two phases: (1) an initial phase following construction, and (2) a subsequent phase to document that performance standards continue to be met. The scope of work described in Section VI includes performance sampling at approximately 30 days, six months, and one year following construction. As such, the On-Scene Coordinator (OSC) anticipates that post-installation proficiency sampling may exceed the 12-month statutory limit. The conditions at the Keystone Corridor Ground Water Contamination Site warrant the 12-month exemption based on the both the emergency and consistency exemptions.

Emergency Exemption:

A. Continued response actions are immediately required to prevent, limit, or mitigate an emergency;

High concentrations of PCE and TCE in indoor air constitute an imminent threat to human health. In one home, TCE exceeded the Urgent Response Action Level. Response actions are immediately required to mitigate exposure to residents to hazardous substances through the vapor intrusion pathway. The response action will both prevent and mitigate threats to human health.

B. There is an immediate risk to public health or welfare or the environment;

Concentrations of hazardous substances in indoor air represent an immediate risk to public health. As documented in Section II, A,1, Removal Site Evaluation, PCE and TCE have been detected above relevant screening levels.

C. Assistance will not otherwise be provided on a timely basis.

The Superfund Remedial Program requested assistance from the Emergency Response and Removal Program to address the threats posed by hazardous substance in indoor air (AR # 45). A Record of Decision has not yet been prepared for the Site. Without a time-critical removal action by EPA, assistance will not otherwise be provided on a timely basis.

Consistency Exemption:

Continued response actions are appropriate and consistent with future remedial actions. The proposed time-critical removal meets the criteria for consistency and does not foreclose the remedial action. The removal action is appropriate to prevent exposure to residents from PCE and/or TCE.

VI. PROPOSED ACTIONS

A. Proposed Actions

1. Proposed action description

The response actions described in this memorandum directly address actual or potential releases of hazardous substances on site, which may pose an imminent and substantial endangerment to public health, or welfare, or the environment.

For cost accounting purposes, EPA estimated the scope of this removal action to include 10 residential properties. Removal activities will include:

1. Performing vapor mitigation at residential properties where relevant indoor air action levels are exceeded in accordance with current EPA guidance;

2. Performing post-installation proficiency sampling 30 days, six months, and one year after mitigation system installation; and

3. Taking any other response actions to address any release or threatened release of a hazardous substance, pollutant or contaminant that the EPA OSC determines may pose an imminent and substantial endangerment to the public health or the environment.

Operation and maintenance of vapor mitigations systems, along with monthly electrical costs, will be the responsibility of the homeowner, in accordance with the Region 5 Vapor Intrusion Guidebook (AR # 5). The property owner must agree to the above provisions in writing prior to EPA installing a vapor mitigation system.

The removal actions will be conducted in a manner not inconsistent with the NCP. EPA will initiate planning for provision of post-removal site control consistent with the provisions of NCP § 300.415(l).

The threats posed by uncontrolled substances considered hazardous meet the criteria listed in NCP § 300.415(b)(2), and the response actions proposed herein are consistent with any long-term remedial actions which may be required. Elimination of hazardous substances, and pollutants and contaminants that pose a substantial threat of release is expected to minimize substantial requirements for post-removal site controls.

Off-Site Rule

All hazardous substances, pollutants, or contaminants removed off-site pursuant to this removal action for treatment, storage, and disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by EPA, with the EPA Off-Site Rule, 40 C.F.R. § 300.440.

2. Contribution to remedial performance

The proposed actions will contribute to the efficient performance of any long-term remedial action with respect to the observed release. Due to the imminent and substantial threat of PCE and TCE in residential indoor air, installation of vapor mitigation systems must be addressed prior to a long-term cleanup. The time-critical removal actions will be consistent with a permanent remedy.

3. Engineering Evaluation/Cost Analysis (EE/CA)

Not Applicable

4. Applicable or relevant and appropriate requirements (ARARs)

On April 7, 2017, EPA's On-Scene Coordinator (OSC) sent a letter requesting ARARs to IDEM (AR # 47). On April 12, 2017, IDEM sent the OSC a letter identifying ARARs (AR # 48). EPA will comply with ARARs that apply to the Site to the extent practicable.

All hazardous substances, pollutants or contaminants removed off-site pursuant to this removal action for treatment, storage and disposal shall be treated, stored, or disposed at a facility in compliance, as determined by EPA, with the EPA Off-Site Rule, 40 CFR § 300.440.

5. Project Schedule

The time-critical removal actions will require approximately 60 working days to complete.

B. <u>Removal Project Ceiling Estimate – Extramural Costs:</u>

<u>Regional Removal Allowance Costs:</u>	
Total Cleanup Contractor Costs (Includes a 20% contingency)	$107,672
<u>Other Extramural Costs Not Funded from the Regional Allowance</u>	
Total START, including multiplier costs	$146,520
Subtotal, Extramural Costs	$254,192
Extramural Costs Contingency (15% of Subtotal, Extramural Costs)	$38,129
TOTAL REMOVAL ACTION PROJECT CEILING	$292,320

The response actions described in this memorandum directly address the actual or threatened release of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health or welfare or to the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the site conditions, the nature of the hazardous substances and pollutants or contaminants documented on site, and the potential exposure pathways to nearby populations described in Section II, III, IV, and V above, actual or threatened releases of hazardous substances and pollutants or contaminants from this Site, if not addressed by implementing or delaying the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment, increasing the potential that

hazardous substances will be released, thereby threatening the adjacent population and the environment.

Delayed action may increase residents prolonged exposure to hazardous substances, such as PCE and TCE. As described in Section III, breathing TCE and PCE may cause headaches, lung irritation, dizziness, poor coordination, difficulty concentrating, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Breathing large amounts of TCE may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage.

VIII. OUTSTANDING POLICY ISSUES

EPA Publication 9200.2-154 *OSWER Technical Guide for Assesing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* provides guidance on vapor intrusion investigations and mitigation. EPA will conduct removal actions so that they are consistent with the guidance.

IX. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Confidential Enforcement Addendum.

The total EPA costs of this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be $560,901[1].

($292,320 + $54,000) + (61.96% x $346,320) = $560,901.

X. RECOMMENDATION

This decision document represents the selected removal actions for the Keystone Corridor Ground Water Contamination Site located in Indianapolis, Marion County, Indiana, developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site.

Conditions at the Site meet the NCP § 300.415(b)(2) criteria for a time-critical removal action and the CERCLA section 104(c) emergency and contingency exemptions from the 12-month limitation. The total project ceiling, if approved, will be $292,320. Of this, as much as $145,800 comes from the Regional removal allowance. I recommend your approval of the proposed removal action. You may indicate your decision by signing below.

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[1] Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgement interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States right to cost recovery.

APPROVE _____ DATE: 5/23/2017
Margaret M. Guerriero, Acting Director, Superfund Division

DISAPPROVE _____ DATE: _____
Margaret M. Guerriero, Acting Director, Superfund Division

Enforcement Addendum

Figures:
1 – Site Location Map
2 – Site Layout Map
3 – Monitoring Well Locations
4 – Soil Gas Sample Locations

Tables:
1 – June 2016 Ground Water Analytical Results
2 – Soil Gas Analytical Results
3 – Residential Subslab and Indoor Air Results

Attachments:
I. Environmental Justice Analysis
II. Administrative Record Index
III. Detailed Cleanup Contractor Estimate
IV. Independent Government Cost Estimate

cc: Brian Schlieger, U.S. EPA, 5104A/B517F **(Schlieger.Brian@epa.gov)**
Lindy Nelson, U.S. DOI, **w/o Enf. Addendum (Lindy_Nelson@ios.doi.gov)**
Rex Osborn, IDEM **w/o Enf. Addendum (rosborn@idem.in.gov)**

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NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

ENFORCEMENT ADDENDUM

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ENFORCEMENT CONFIDENTIAL

NOT SUBJECT TO DISCOVERY

FOIA EXEMPT

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

FIGURES

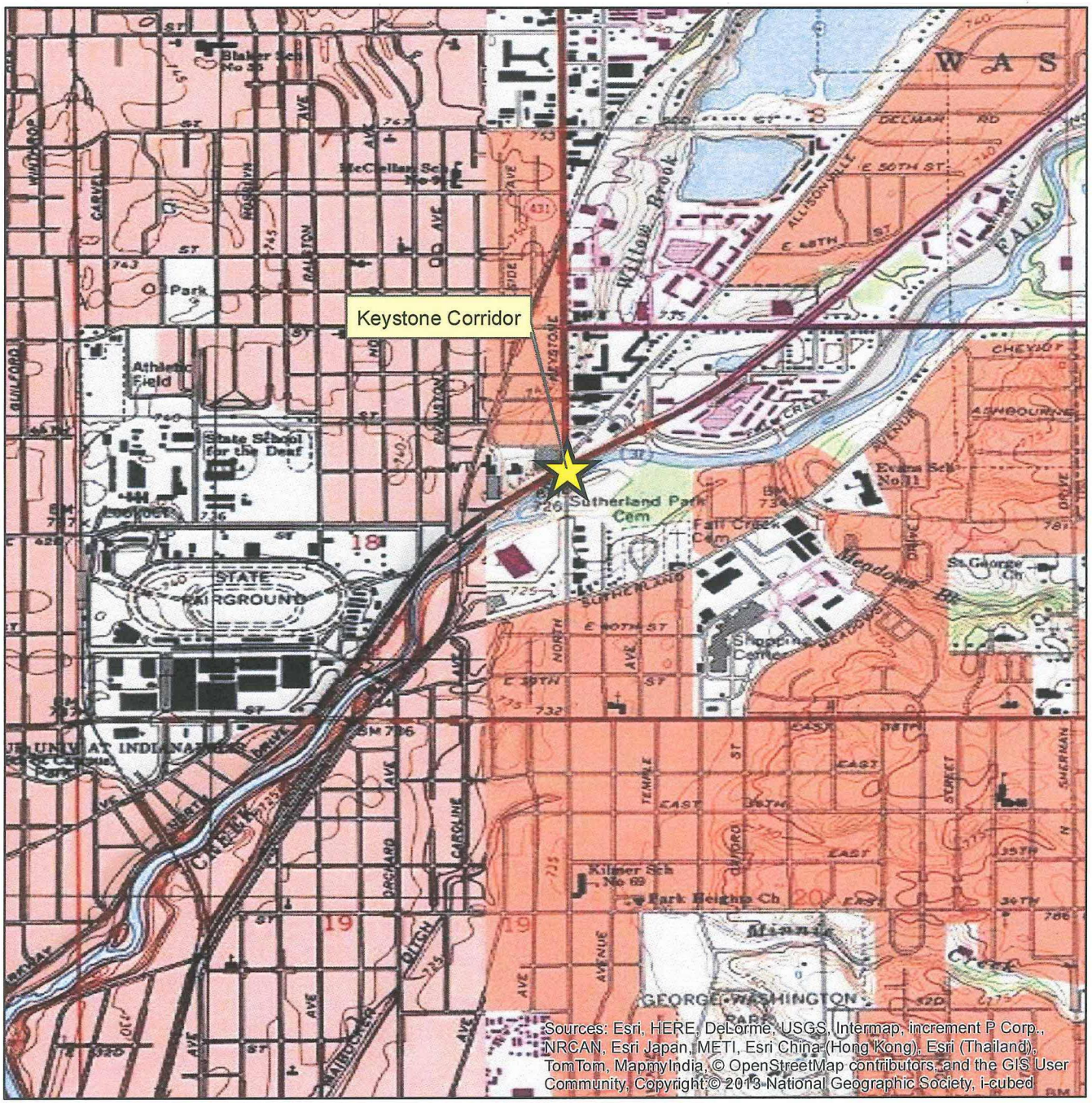

FIGURE 1
SITE LOCATION MAP
KEYSTONE CORRIDOR GROUND
WATER CONTAMINATION SITE
INDIANAPOLIS, INDIANA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

1:24,000

0 2,000 4,000 Feet

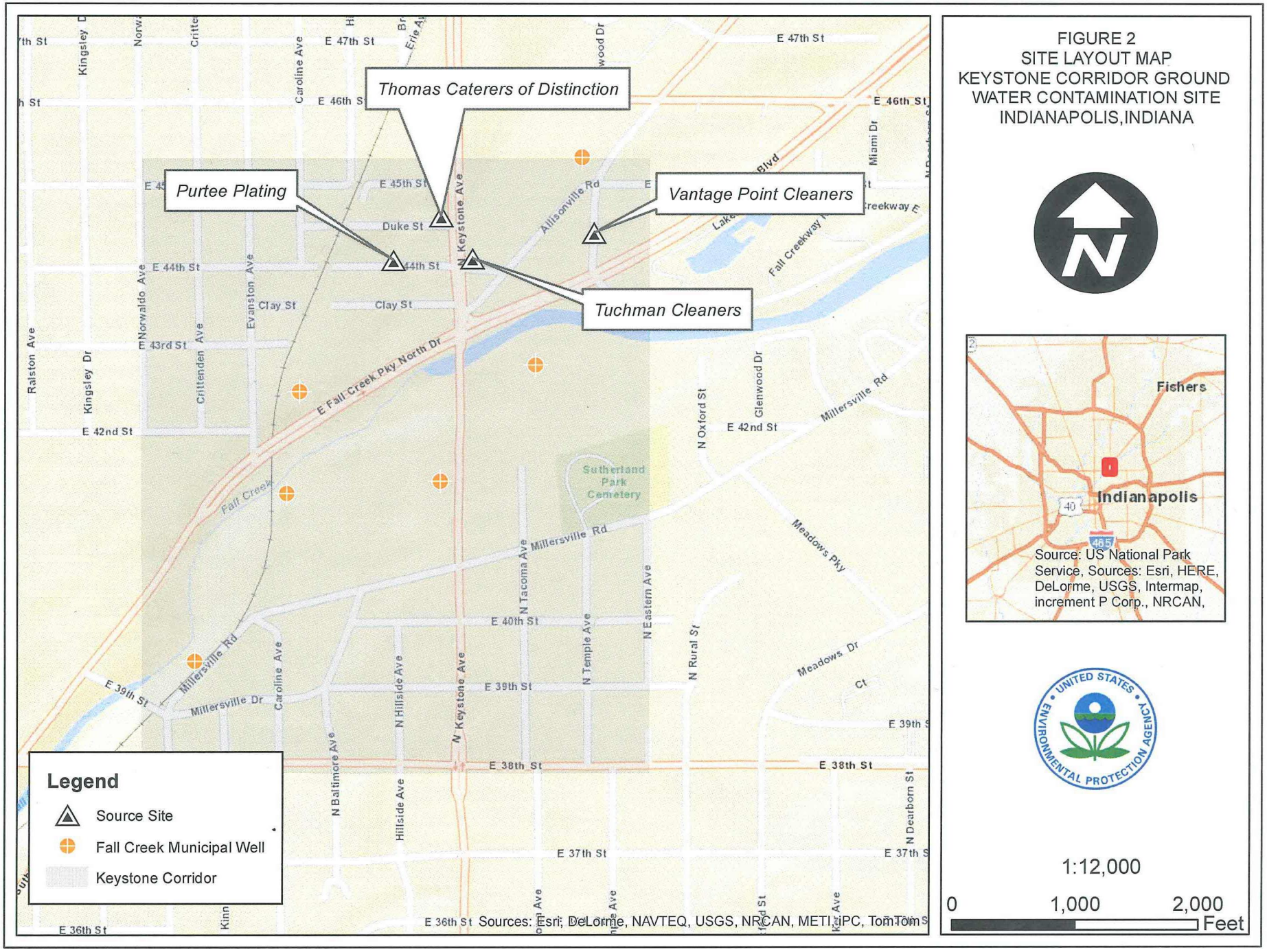

FIGURE 2
SITE LAYOUT MAP
KEYSTONE CORRIDOR GROUND WATER CONTAMINATION SITE
INDIANAPOLIS,INDIANA

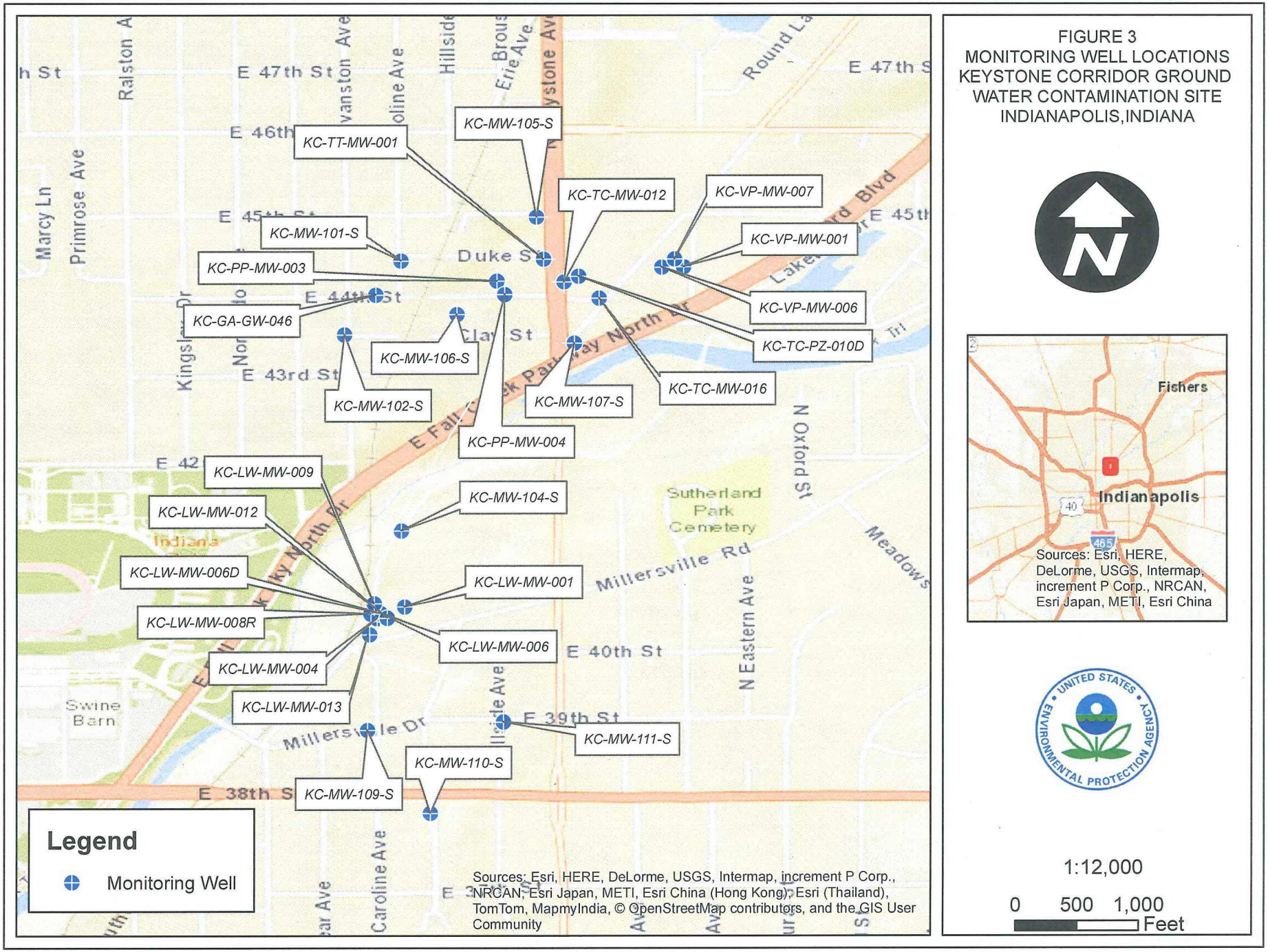

FIGURE 3
MONITORING WELL LOCATIONS
KEYSTONE CORRIDOR GROUND WATER CONTAMINATION SITE
INDIANAPOLIS,INDIANA

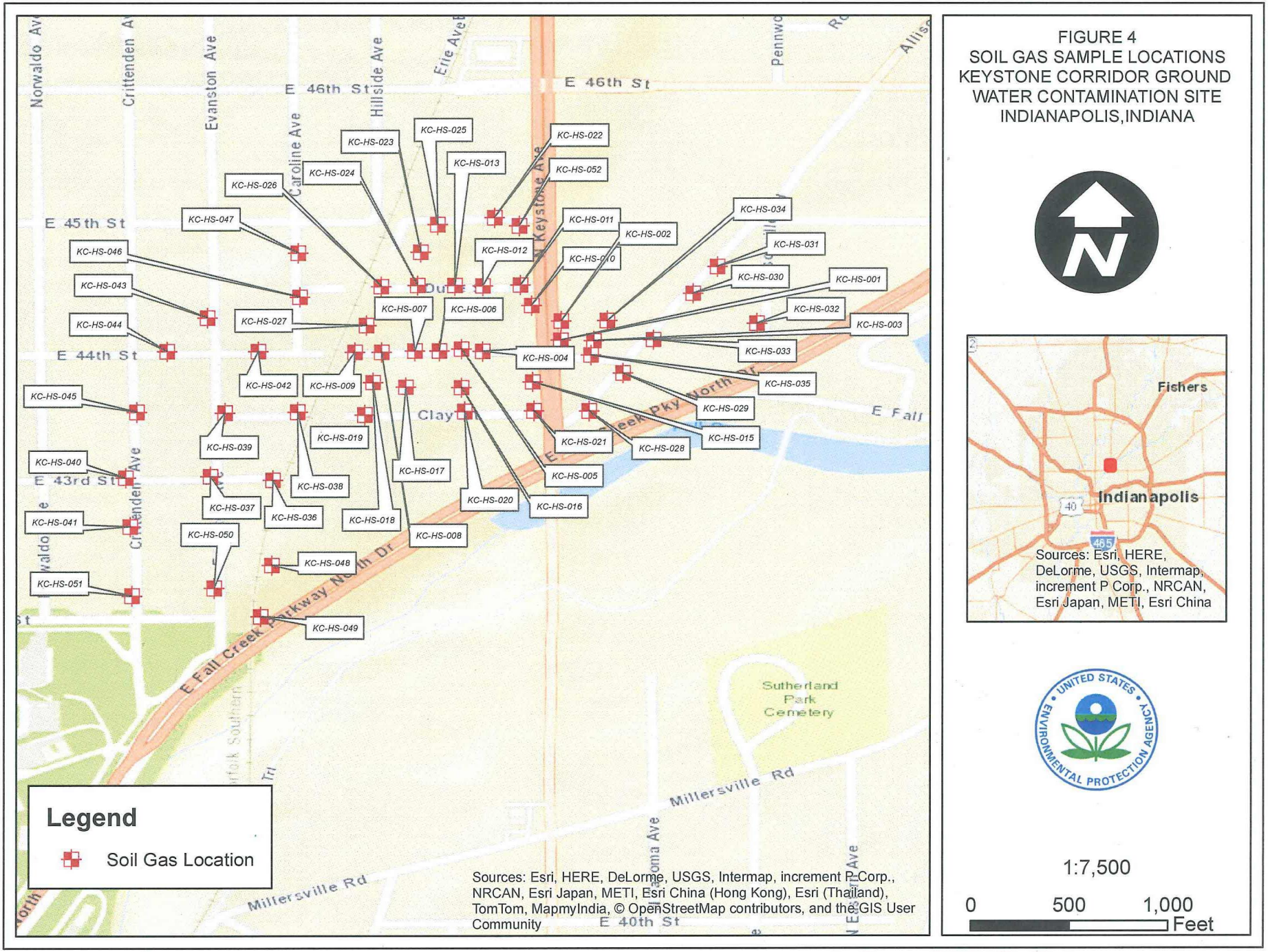
FIGURE 4
SOIL GAS SAMPLE LOCATIONS
KEYSTONE CORRIDOR GROUND
WATER CONTAMINATION SITE
INDIANAPOLIS,INDIANA
Legend
Soil Gas Location
KC-HS-001
KC-HS-002
KC-HS-003
KC-HS-004
KC-HS-005
KC-HS-006
KC-HS-007
KC-HS-008
KC-HS-009
KC-HS-010
KC-HS-011
KC-HS-012
KC-HS-013
KC-HS-015
KC-HS-016
KC-HS-017
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KC-HS-052
E 46th St
E 45th St
E 44th St
E 43rd St
E 40th St
Millersville Rd
E Fall Creek Parkway North Dr
Keystone Ave
Caroline Ave
Hillside Ave
Evanston Ave
Crittenden Ave
Norwaldo Ave
Sutherland Park Cemetery
Fishers
Indianapolis
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
1:7,500
0
500
1,000
Feet

TABLES

TABLE 1
JUNE 2016 GROUND WATER ANALYTICAL RESULTS
KEYSTONE CORRIDOR GROUND WATER CONTAMINATION SITE

Location	Sample Date	Tetrachloroethene (µg/L)[1]	Trichloroethylene (µg/L)
Target Ground Water Concentration[2]		**170**	**5.2**
KC-LW-MW-001	6/21/16	1 U[3]	1 U
KC-LW-MW-004	6/21/16	4.1	1 U
KC-LW-MW-006	6/22/16	**270**	**16**
KC-LW-MW-006D	6/22/16	1 U	1 U
KC-LW-MW-008R	6/23/16	13	1 U
KC-LW-MW-009	6/23/16	1 U	1 U
KC-LW-MW-012	6/21/16	1.8	1 U
KC-LW-MW-013	6/21/16	1 U	1 U
KC-MW-101-S	6/21/16	1 U	1 U
KC-MW-102-S	6/22/16	1 U	1 U
KC-MW-104-S	6/22/16	14	3.1
KC-MW-105-S	6/22/16	1 U	1 U
KC-MW-106-S	6/22/16	**1,900**	**73**
KC-MW-107-S	6/22/16	1 U	1 U
KC-MW-109-S	6/23/16	1 U	2
KC-MW-110-S	6/23/16	1 U	1 U
KC-MW-111-S	6/23/16	1 U	1 U
KC-PP-MW-003	6/24/16	**500**	**57**
KC-PP-MW-004	6/24/16	**600**	**21**
KC-TC-MW-012	6/24/16	19	1 U
KC-TC-MW-016	6/24/16	2.8	1 U
KC-TC-PZ-010D	6/23/16	1 U	1 U
KC-TT-MW-001	6/21/16	110	**10**
KC-VP-MW-001	6/23/16	1 U	1 U
KC-VP-MW-005	6/23/16	1 U	1 U
KC-VP-MW-006	6/23/16	1 U	1 U
KC-VP-MW-007	6/23/16	1 U	1 U

Notes:

1. µg/L - micrograms per liter
2. Target Ground Water Concentrations were calculated with EPA's Vapor Intrusion Screening Level Calculator using Target Carcinogen Risk of $1x10^{-4}$ and Target Hazard Quotient for Non-Carcinogens of 3 for PCE and 1 for TCE.
3. U - Not detected
4. Bolded values exceed Target Ground Water Concentrations.

TABLE 2
SOIL GAS ANALYTICAL RESULTS
KEYSTONE CORRIDOR GROUND WATER CONTAMINATION SITE

Location	Sample Date	Tetrachloroethene (ppbv)[1]	Trichloroethylene (ppbv)
Target Soil Gas Concentration[2]		**619**	**13**
KC-HS-001	9/26/16	**11,500**	**197**
KC-HS-002	9/26/16	**1,320**	3.18
KC-HS-003	9/26/16	**27,700**	120 U[3]
KC-HS-004	9/27/16	**25,700**	**563**
KC-HS-005	9/27/16	**50,900**	**1,410**
KC-HS-006	9/27/16	**38,300**	**2,020**
KC-HS-007	9/27/16	**6,760**	**352**
KC-HS-008	9/27/16	439	10.5
KC-HS-009	9/27/16	613	**50.5**
KC-HS-010	9/28/16	593	1 U
KC-HS-011	9/28/16	**995**	12.4
KC-HS-012	9/28/16	61.4	8.04
KC-HS-013	9/28/16	61.6	9.22
KC-HS-015	9/29/16	**1,240**	**16.8**
KC-HS-016	9/29/16	**4,510**	**47.7**
KC-HS-017	9/29/16	**8,300**	**215**
KC-HS-018	9/29/16	**9,700**	**317**
KC-HS-019	9/29/16	**9,370**	**302**
KC-HS-020	9/29/16	**8,000**	**353**
KC-HS-021	9/29/16	519	4.79
KC-HS-022	9/30/16	28.8	4.19
KC-HS-023	9/30/16	6.32	0.259
KC-HS-024	10/4/16	12.4	**55.7**
KC-HS-025	9/30/16	3.94	0.142
KC-HS-026	9/30/16	3.6	0.835
KC-HS-027	9/30/16	3.85	9.1
KC-HS-028	10/1/16	4.57	0.1 U
KC-HS-029	10/1/16	6.62	0.1 U
KC-HS-030	10/1/16	**714**	1 U
KC-HS-031	10/1/16	6.55	0.1 U
KC-HS-032	10/1/16	2.3	0.1 U
KC-HS-033	10/1/16	201	0.1 U
KC-HS-034	10/1/16	**764**	**30**
KC-HS-035	10/1/16	**17,300**	**309**
KC-HS-036	10/2/16	**4,910**	**432**

Location	Sample Date	Tetrachloroethene (ppbv)	Trichloroethylene (ppbv)
KC-HS-037	10/2/16	**788**	**81.1**
KC-HS-038	10/2/16	**5,550**	**191**
KC-HS-039	10/2/16	**916**	**40.3**
KC-HS-040	10/2/16	4.06	0.113
KC-HS-041	10/2/16	6.71	0.383
KC-HS-042	10/3/16	10.7	0.127
KC-HS-043	10/3/16	1.46	0.1 U
KC-HS-044	10/3/16	1.21	0.1 U
KC-HS-045	10/3/16	4.69	0.1 U
KC-HS-046	10/3/16	2.65	0.1 U
KC-HS-047	10/3/16	1.55	0.1 U
KC-HS-048	10/4/16	366	**532**
KC-HS-049	10/4/16	40	**106**
KC-HS-050	10/4/16	**736**	**293**
KC-HS-051	10/4/16	7.69	1.07
KC-HS-052	10/5/16	36.9	0.2 U

Notes:

1. ppbv - parts per billion by volume

2. Target Ground Water Concentrations were calculated with EPA's Vapor Intrusion Screening Level Calculator using Target Carcinogen Risk of $1x10^{-4}$ and Target Hazard Quotient for Non-Carcinogens of 3 for PCE and 1 for TCE.

3. U - Not detected

4. Bolded values exceed Target Soil Gas Concentrations.

TABLE 3
RESIDENTIAL SUBSLAB AND INDOOR AIR RESULTS
KEYSTONE CORRIDOR GROUND WATER CONTAMINATION SITE

Property ID	Residential Subslab VISL[1]	**RP-039**		**RP-047**
Field Sample ID		KC-RP-039-SS-01-022117		KC-RP-047-SS-01-022117
EPA Sample ID		17CY04-07		17CY04-02
Sample Location		Subslab		Subslab
Date Collected		2/21/17		2/21/17
Volatile Organic Compounds (µg/m^3)[2]				
1,1,1-Trichloroethane	520,000	170		39
Chloroform	410	55		4.9
cis-1,2-Dichloroethene	--	54 U		0.73 U
Tetrachloroethene	4,200	**7,700**		95
trans-1,2-Dichloroethene	--	54 U		0.73 U
Trichloroethene	70	**260**		**33**
Vinyl Chloride	560	54 U		0.73 U
Property ID		**RP-039**		**RP-047**
Field Sample ID	Residential Indoor Air VISL	KC-RP-039-CS-01-022217	KC-RP-039-IA-01-022217	KC-RP-047-IA-01-022217
EPA Sample ID		17CY04-06	17CY04-08	17CY04-03
Sample Location		Crawl Space	Indoor Air	Indoor Air
Date Collected		2/22/17	2/22/2017	2/22/2017
Volatile Organic Compounds (µg/m^3)				
1,1,1-Trichloroethane	16,000	1.8	3.3	2.0
Chloroform	12	1.2	5.2	5.3
cis-1,2-Dichloroethene	--	0.042 U	0.025	0.019 J
Tetrachloroethene	130	67	**190 D[4]**	5.4
trans-1,2-Dichloroethene	--	0.042 U	0.02 J[5]	0.016 J
Trichloroethene	2.1	**2.2**	**6.3**	**4.5**
Vinyl Chloride	17	0.042 U	0.039 U	0.041 U

Notes:

1. VISL - Vapor Intrusion Screening Level. Calculated using TCR of $1x10^{-4}$ and THQ of 1 for TCE and THQ of 3 for other constituents.

2. µg/m^3 - micrograms per cubic meter
3. U - Not detected
4. D - Diluted
5. J - Estimated
6. Bolded results exceed VISL.

ATTACHMENT I

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ENVIRONMENTAL JUSTICE ANALYSIS
FOR
KEYSTONE CORRIDOR GROUND WATER CONTAMINATION SITE
INDIANAPOLIS, MARION COUNTY, INDIANA

EJSCREEN Report (Version 2016)

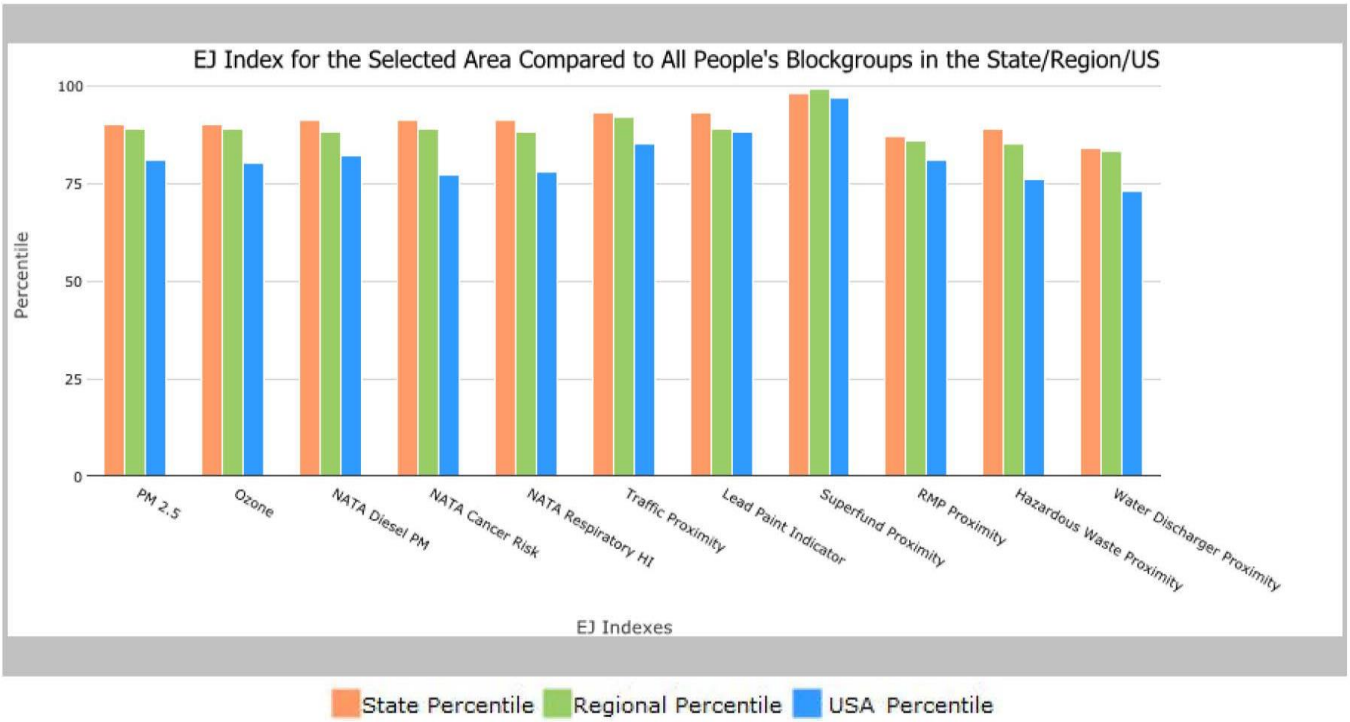
1 mile Ring Centered at 39.835082,-86.121602, INDIANA, EPA Region 5

Approximate Population: 9,357

Input Area (sq. miles): 3.14

Keystone Corridor

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	90	89	81
EJ Index for Ozone	90	89	80
EJ Index for NATA* Diesel PM	91	88	82
EJ Index for NATA* Air Toxics Cancer Risk	91	89	77
EJ Index for NATA* Respiratory Hazard Index	91	88	78
EJ Index for Traffic Proximity and Volume	93	92	85
EJ Index for Lead Paint Indicator	93	89	88
EJ Index for Superfund Proximity	98	99	97
EJ Index for RMP Proximity	87	86	81
EJ Index for Hazardous Waste Proximity+	89	85	76
EJ Index for Water Discharger Proximity	84	83	73



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

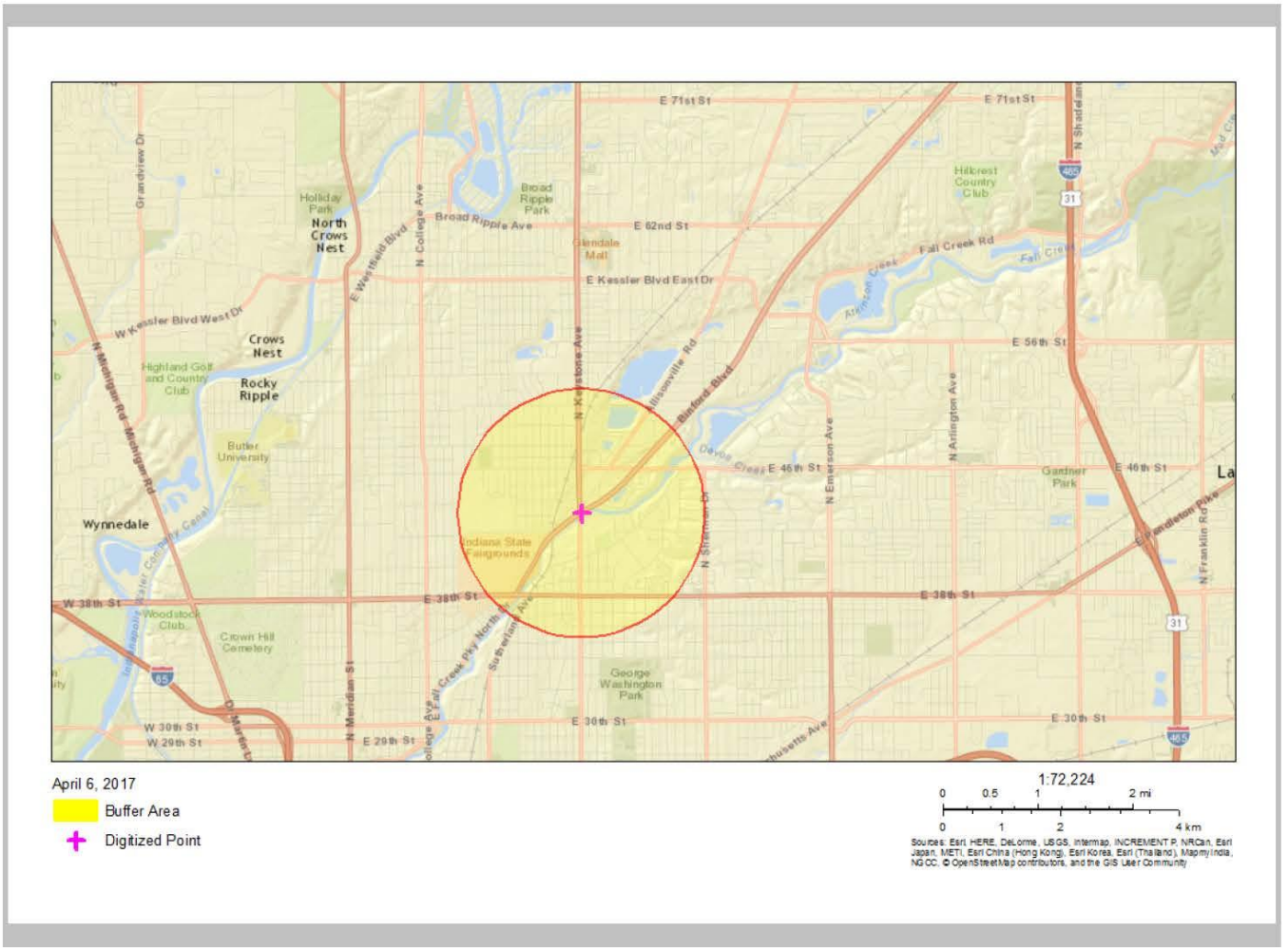
EJSCREEN Report (Version 2016)

1 mile Ring Centered at 39.835082,-86.121602, INDIANA, EPA Region 5

Approximate Population: 9,357

Input Area (sq. miles): 3.14

Keystone Corridor



Sites reporting to EPA	
Superfund NPL	1
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0
National Pollutant Discharge Elimination System (NPDES)	0

EJSCREEN Report (Version 2016)

1 mile Ring Centered at 39.835082,-86.121602, INDIANA, EPA Region 5

Approximate Population: 9,357

Input Area (sq. miles): 3.14

Keystone Corridor

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m^3)	11.6	11	92	10.6	82	9.32	92
Ozone (ppb)	52.1	51.2	69	50.3	74	47.4	75
NATA* Diesel PM (µg/m^3)	1.34	0.835	88	0.931	70-80th	0.937	80-90th
NATA* Cancer Risk (lifetime risk per million)	42	34	89	34	80-90th	40	50-60th
NATA* Respiratory Hazard Index	2	1.4	89	1.7	70-80th	1.8	60-70th
Traffic Proximity and Volume (daily traffic count/distance to road)	430	250	84	370	79	590	75
Lead Paint Indicator (% Pre-1960 Housing)	0.55	0.36	75	0.39	69	0.3	78
Superfund Proximity (site count/km distance)	0.96	0.16	97	0.12	98	0.13	98
RMP Proximity (facility count/km distance)	0.28	0.52	56	0.51	57	0.43	65
Hazardous Waste Proximity+ (facility count/km distance)	0.074	0.09	69	0.11	56	0.11	54
Water Discharger Proximity (facility count/km distance)	0.1	0.34	21	0.31	28	0.31	32
Demographic Indicators							
Demographic Index	68%	27%	94	29%	91	36%	87
Minority Population	77%	19%	95	24%	91	37%	83
Low Income Population	58%	35%	84	33%	85	35%	83
Linguistically Isolated Population	3%	2%	79	2%	75	5%	60
Population With Less Than High School Education	18%	12%	77	11%	81	14%	72
Population Under 5 years of age	8%	6%	72	6%	76	6%	73
Population over 64 years of age	9%	14%	25	14%	26	14%	30

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

+ The hazardous waste environmental indicator and the corresponding EJ index will appear as N/A if there are no hazardous waste facilities within 50 km of a selected location.

For additional information, see: www.epa.gov/environmentaljustice

ATTACHMENT II

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR THE
KEYSTONE CORRIDOR GROUND WATER CONTAMINATION SITE
INDIANAPOLIS, MARION COUNTY, INDIANA

ORIGINAL
MAY 2017

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	923408	9/1/97	ATSDR	Public	ToxFAQs Fact Sheet - Tetrachloroethylene - CAS #127-18-4	2
2	933896	7/1/03	ATSDR	Public	ToxFAQs Fact Sheet - Trichloroethylene - CAS #79-01-6	2
3	933879	11/17/04	McLeland, A., and Johnson, K., August Mack	Wark, J., National Bank of Indianapolis	Final Report - Phase I Environmental Site Assessment Update	144
4	903339	4/15/10	Alt & Witzig Engineering	Groves, D., IDEM	Phase II Investigation Report	70
5	933894	10/1/10	U.S. EPA	File	U.S. EPA Region 5 Vapor Intrusion Guidebook	323
6	903357	1/23/12	Burns Environmental Engineering	Purtee Property Management	Subsurface Investigation Report, Former Purtee Plating	266
7	933886	2/2/12	Easterly, T., IDEM	Mayco Holdings, LLC	Order of the Commissioner of the Indiana Department of Environmental Management to Compel Response Action	25

8	441048	8/16/12	Lam, S., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum re: Request for a Time Critical Removal Action and Exemptions from the 12-Month and $2 Million Statutory Limits at the Tuchman Cleaners Site (***Portions of this document have been redacted***)	33
9	435674	9/20/12	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 1 - Initial - Tuchman Cleaners Site	8
10	435692	9/28/12	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 2 - Progress - Tuchman Cleaners Site	9
11	435707	10/5/12	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 3 - Progress - Tuchman Cleaners Site	9
12	435719	10/12/12	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 4 - Progress - Tuchman Cleaners Site	9
13	435724	10/19/12	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 5 - Progress - Tuchman Cleaners Site	9
14	933878	10/25/12	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 6 - Progress - Tuchman Cleaners Site	6
15	435761	11/5/12	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 7 - Progress - Tuchman Cleaners Site	8
16	435762	11/16/12	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 8 - Progress - Tuchman Cleaners Site	10
17	435774	11/29/12	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 9 - Progress - Tuchman Cleaners Site	10
18	435789	12/21/12	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 10 - Progress - Tuchman Cleaners Site	10
19	435803	1/30/13	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 11 - Progress - Tuchman Cleaners Site	9
20	435889	3/18/13	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 12 - Progress - Tuchman Cleaners Site	8
21	933885	4/17/13	Junk, T., Indiana Office of Attorney General	Thomas-Crannel, S., S&F Land Development, and Early, K., Thomas Caterers of Distinction	Letter re: Ability to Fund Further Site Investigation and Cleanup	5

22	903274	5/1/13	U.S. EPA	File	HRS Documentation Record	42
23	933884	5/2/13	Groves, D., IDEM	Purtee, C., Purtee Property Management	Letter re: Comments on Corrective Action Plan	4
24	435959	5/11/13	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 13 - Progress - Tuchman Cleaners Site	8
25	456894	7/12/13	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 14 - Progress - Tuchman Cleaners Site	7
26	456994	10/23/13	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 15 - Progress - Tuchman Cleaners Site	6
27	457106	3/4/14	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 16 - Progress - Tuchman Cleaners Site	6
28	457107	5/13/14	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 17 - Progress - Tuchman Cleaners Site	6
29	933893	7/9/14	Manzanilla, E., U.S. EPA	Region 9 Superfund Division Staff and Management	Memo re: Region 9 Response Action Levels and Recommendations to Address Near-Term Inhalation Exposures to TCE in Air from Subsurface Vapor Intrusion	6
30	457191	9/30/14	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 18 - Progress - Tuchman Cleaners Site	8
31	457246	1/8/15	Lam, S., U.S. EPA	Distribution List	Pollution Report (POLREP) 19 - Final - Tuchman Cleaners Site	6
32	933922	4/29/15	Burns Environmental Engineering	Purtee Property and Management	First Quarter 2015 Groundwater Monitoring Report	202
33	933895	6/1/15	U.S. EPA	File	OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air	268
34	933924	9/25/15	IDEM	Settling Parties	Settlement and Release Agreement	21
35	933883	7/7/16	ALS Group	CH2M Hill	Analytical Lab Report #16061570	17
36	933880	7/19/16	ALS Group	CH2M Hill	Analytical Lab Report #16061293	20
37	933881	7/19/16	ALS Group	CH2M Hill	Analytical Lab Report #16061392	27

38	933882	7/19/16	ALS Group	CH2M Hill	Analytical Lab Report #16061475	26
39	933923	2/23/17	Purtee Property and Management	IDEM	Environmental Restrictive Covenant	37
40	933890	2/27/17	ALS Environmental	CH2M Hill	Detail Summary Report - P1700936	6
41	933891	2/27/17	ALS Environmental	CH2M Hill	Detail Summary Report - P1700937	5
42	933898	2/27/17	ALS Environmental	CH2M Hill	Detail Summary Report - P1700939	11
43	933899	3/1/17	ALS Environmental	CH2M Hill	Detail Summary Report - P1700992	8
44	933900	3/2/17	ALS Environmental	CH2M Hill	Detail Summary Report - P1701021	14
45	933887	3/7/17	Augustyn, J., U.S. EPA	Lam, S., U.S. EPA	Email re: Request for Removal Consultation - Keystone Corridor Ground Water Contamination Site Vapor Intrusion	5
46	933892	3/13/17	Fishwild, B., CH2M Hill	Blake, L., U.S. EPA	Keystone Phase 3 HAPSITE Data Dump	7
47	933888	4/7/17	Lam, S., U.S. EPA	Osborn, R., IDEM	Letter re: Request for Applicable or Relevant and Appropriate Requirements (ARARs)	1
48	933889	4/12/17	Petroff, D., IDEM	Lam, S., U.S. EPA	Letter re: Applicable or Relevant and Appropriate Requirements (ARARs) for the Keystone Corridor Ground Water Contamination Site	4
49	-	-	Lam, S., U.S. EPA	Guerriero, M., U.S. EPA	Action Memorandum re: Request for a Time-Critical Removal Action at the Keystone Corridor Ground Water Contamination Site (***PENDING***)	-

ATTACHMENT III

DETAILED CLEANUP CONTRACTOR ESTIMATE

HAS BEEN REDACTED – ONE PAGE

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

ATTACHMENT IV

INDEPENDENT GOVERNMENT COST ESTIMATE

HAS BEEN REDACTED – THREE PAGES

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION